REMARKS

Applicant respectfully requests reconsideration of the present application in view of the reasons that follow. Claims 1 and 3-25 are now pending in this application. Claim 13 has been withdrawn from consideration.

Finality of the Office Action

As noted in the response submitted November 9, 2009, claims 8 and 21 were not indicated as including allowable subject matter or rejected in the Office Action mailed August 7, 2009. As a result, the Office Action mailed August 7, 2009 was incomplete. Claims 8 and 21 are now rejected but the Office has not provided any explanation of why claims 8 and 21 were omitted in the Office Action mailed August 7, 2009.

Furthermore, the Office has made the present Office Action a Final rejection. Applicant respectfully submits that it was not proper to make the present Office Action Final because the Office Action mailed August 7, 2009 provided an incomplete examination of the claims, namely claims 8 and 21. Instead, the present Office Action should have been Non-final and this reply should be treated as a response to a Non-final Office Action, not an after-Final reply.

Rejection under 35 U.S.C. § 102

Claims 1, 3, 6, 14-16, and 19 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Pub. No. 2001/0014415 to Iio *et al.* (hereafter "Iio"). This rejection is respectfully traversed.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Vedegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See generally MPEP § 2131.

Iio discloses a fuel cell system that includes a hydrogen supply unit 2 that supplies hydrogen gas to a fuel cell stack 1 and an air supply unit 3 that supplies air to the fuel cell

stack 1. See Iio at paragraph 0024. Iio discloses that the fuel cell system purges surplus moisture to optimize electric power output. See Iio at paragraphs 0003 and 0004.

The hydrogen supply unit 2 includes a reformer 6 that reforms fuel "to produce mixed gas of hydrogen and carbon monoxide," with the carbon monoxide removed by a CO remover 7 to provide "pure hydrogen gas." See Iio at paragraph 0025. This "pure hydrogen gas" flows from the CO remover 7 through a hydrogen gas supply passage Ph1 and a humidifier 9 to the fuel cell stack 1. See Iio at paragraphs 0025 and 0026. Iio discloses that "surplus hydrogen gas" not reacted in the fuel cell stack and surplus air respectively flow through passages Ph2, Pa2 to a combuster 4. See Iio at paragraph 0029. A hydrogen control valve 11 is provided in the exhaust hydrogen passage Ph2 to regulate a flow rate of "hydrogen gas" flowing through the exhaust hydrogen passage Ph2. See Iio at paragraph 0030. Iio further discloses embodiments that include a recirculation passage Ph3 to recirculate surplus hydrogen gas. See Iio at paragraphs 0052-0057 and Figures 5 and 6.

The Office argues on page 3 of the Office Action that although Iio is silent in regard to a controller being configured to adjust the valve opening degree of the purge valve such that a nitrogen concentration of the fuel gas in the recirculation system is controlled to be maintained at a target nitrogen concentration, as recited in claim 1, the device of Iio would inherently provide this feature. In particular, the Office argues that the device of Iio would control nitrogen concentration to be maintained at a target nitrogen concentration because paragraph 0045 of Applicant's application (the Office appears to refer to paragraph 0045 of U.S. Pub. No. 2005/0244686, the publication of Applicant's application, which corresponds to page 10, lines 7-12, of Applicant's specification) discusses how hydrogen flow rate discharged through a purge valve can be controlled to a threshold and nitrogen concentration in a fuel recirculation system can be controlled to a constant level without using a nitrogen concentration sensor.

In other words, the Office appears to argue that because the device of Iio controls the flow of gas through a valve, such as the hydrogen control valve 11 and/or the second hydrogen control valve 14, that the device of Iio controls a flow rate of fuel in a fuel gas and

controls a nitrogen concentration of the fuel gas in a recirculation system, as recited in claim 1. Applicant respectfully disagrees.

The device of Iio does not include a controller is configured to: adjust the valve opening degree of the purge valve to maintain a flow rate of fuel in a fuel gas passing through the purge valve at a threshold set in accordance with operation conditions of the fuel cell system and the valve opening degree of the purge valve, by reducing the valve opening degree of the purge valve if the flow rate of fuel in the fuel gas passing through the purge valve is more than the threshold, and increasing the valve opening degree of the purge valve if the flow rate of the fuel gas passing through the purge valve is less than the threshold, as recited in claim 1.

In particular, the device of Iio does not adjust a valve opening degree of a purge valve to maintain a flow rate of fuel in a fuel gas passing through the purge valve, as recited in claims 1 and 14. Instead, the device of Iio provides "pure hydrogen gas" to the fuel cell stack and exhausts "surplus hydrogen gas" from the fuel cell stack of Iio, which is recirculated or combusted (emphasis added). See Iio at paragraphs 0025 and 0029. Because the device of Iio uses pure hydrogen gas and a surplus hydrogen gas exhausted from the stack, the device of Iio does not use "fuel in a fuel gas," as recited in claim 1, but instead uses hydrogen, or simply "fuel," instead of hydrogen in a fuel gas. As a result, the device of Iio does not provide "a fuel gas passing through the purge valve," as recited in claim 1, because the device of Iio instead passes surplus hydrogen gas through the second hydrogen control valve 14.

Applicant notes that the flow rate Qph noted by the Office on page 3 of the Office Action is a flow rate Qph of hydrogen in a nitrogen containing fuel gas, as discussed on page 5, lines 21-25, of Applicant's specification. This flow rate Qph can be determined, for example, by subtracting a flow rate of hydrogen to be consumed without being purged, Qeh, from a flow rate of hydrogen supplied to a fuel cell system, Qih. See page 8, lines 21-25, of Applicant's specification.

Nor does Iio provide a controller configured to adjust, reduce, and increase a valve opening degree of a purge valve to maintain a flow rate of fuel in a fuel gas passing through

the purge valve at a threshold set in accordance with operation conditions of the fuel cell system and the valve opening degree of the purge valve, by reducing the valve opening degree of the purge valve if the flow rate of fuel in the fuel gas passing through the purge valve is more than the threshold, as recited in claim 1.

As discussed in the response of November 9, 2009, case law demonstrates that a special purpose machine or computer configured or otherwise programmed to perform a function is not anticipated by a general purpose machine or computer that lacks the same configuration or programming, and that it would not have been obvious to modify such a general purpose machine or computer to have the configuration or programming of a claimed special purpose machine or computer, absent a teaching or suggestion in the prior art to do so. The control unit 5 of Iio does not provide the structure of the controller recited in claim 1 because the device of Iio uses pure hydrogen, not fuel in a fuel gas. As a result, the control unit 5 of Iio is not structured to control a purge valve to control the flow rate of a fuel in a fuel gas, as recited in claim 1.

Similarly, the device of Iio does not provide the fuel cell system of claim 14 because one of ordinary skill in the art would understand that "fuel gas," as recited in claim 14, is not simply hydrogen gas but includes additional gases or chemical species. As a result, Iio does not anticipate the fuel cell system of claim 14.

For at least the reasons discussed above, Iio does not anticipate claims 1, 3, 6, 14-16, and 19 because Iio does not disclose all of the features of claims 1 and 14. Reconsideration and withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 4, 5, 17, and 18 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Iio in view of U.S. Patent 5,605,770 to Andreoli *et al.* (hereafter "Andreoli") and U.S. Pub. No. 2002/0022167 to Herron (hereafter "Herron"). This rejection is respectfully traversed. Andreoli and Herron fail to remedy the deficiencies of Iio discussed above in regard to independent claims 1 and 14, from which claims 4, 5, 17, and 18 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 7 and 20 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Iio in view of U.S. Patent No. 6,063,515 to Epp *et al.* (hereafter "Epp"). This rejection is respectfully traversed. Epp fails to remedy the deficiencies of Iio discussed above in regard to independent claims 1 and 14, from which claims 7 and 20 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 8 and 21 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Iio and Epp in view of Andreoli. This rejection is respectfully traversed. Andreoli fails to remedy the deficiencies of Iio and Epp discussed above in regard to independent claims 1 and 14, from which claims 8 and 21 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 9 and 22 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Iio in view of JP 2002-151116 to Nakao (hereafter "Nakao"). This rejection is respectfully traversed. Nakao fails to remedy the deficiencies of Iio discussed above in regard to independent claims 1 and 14, from which claims 9 and 22 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 10 and 23 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Iio and Nakao in view of Andreoli. This rejection is respectfully traversed. Andreoli fails to remedy the deficiencies of Iio and Nakao discussed above in regard to independent claims 1 and 14, from which claims 10 and 23 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 11, 12, 24, and 25 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Iio in view of U.S. Patent No. 6,096,449 to Fuglevand *et al.* (hereafter "Fuglevand"). This rejection is respectfully traversed. Fuglevand does not remedy the deficiencies of Iio discussed above in regard to independent claims 1 and 14, from which claims 11, 12, 24, and 25 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Conclusion

Applicant submits that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date June 7, 2010

By

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